

AMENDMENT

In the claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (currently amended) A fabrication system, comprising:
a plurality of fabrication facilities, each of which comprises a tool group, wherein each tool group comprises a plurality of tools; and
a backup planning device assigning a virtual tool to ~~each of~~ the tool group[[s]] of each of the fabrication facilities, combining capacity of the virtual tool into first capacity information of the tool group to generate second capacity information thereof accordingly, determining a first manufacturing plan specifying workload allocation for the tools and virtual tool for the tool group according to a master production schedule, a WIP (work-in-process) profile, and the second capacity information thereof, and determining a second manufacturing plan specifying renewed workload allocation for the tools and virtual tool according to the workload allocation for the virtual tool in the first manufacturing plan.
2. (currently amended) The fabrication system of claim 1, wherein the virtual tool is assessed as having[[has]] unlimited capacity and is defined as a [[the]] least preferred tool in the tool group.

3. (currently amended) The fabrication system of claim 1, wherein the backup planning device further ~~determines~~ selects the a backup request tool group of one of the fabrication facilities as a backup requester according to the workload allocation of the virtual tool specified in the first manufacturing plan.

4. (currently amended) The fabrication system of claim 3[[1]], wherein the backup planning device further ~~determines~~ defines a backup demand, equal to the workload allocation of the virtual tool, of the ~~backup request tool group~~ backup requester according to the first manufacturing plan.

5. (currently amended) The fabrication system of claim 4, wherein the backup planning device further ~~determines~~ defines ~~[[a]]the backup supply tool group of one of the fabrication facilities as a backup supplier to fulfill the backup demand and a backup supply provided therefrom~~ according to the first manufacturing plan, the backup demand, and the master production schedule.

6. (currently amended) The fabrication system of claim 5, wherein the backup planning device further allocates each of the tools of the backup supply tool group backup supplier an equal share of the workload allocation specified in the backup demand ~~gained in the backup operation~~.

7. (currently amended) The fabrication system of claim 5[[1]], wherein the backup planning device further introduces a simulated backup tool, having capacity equaling backup capacity received from the backup ~~supplier supply-tool-group~~, to the backup requester~~-tool-group~~.

8. (currently amended) The fabrication system of claim 1, wherein the tool group comprises the tool for[[is a]] semiconductor manufacturing~~-tool~~.

9. (currently amended) A backup planning system scheduling backup operations in a manufacturing system, wherein the manufacturing system comprises a plurality of manufacturing facilities, each of which comprises a plurality of tool groups, and each tool group comprises a plurality of tools, the backup planning system comprising:

means for providing first capacity information, a master production schedule, and a WIP

(work-in-process) profile of the tool group;

means for assigning a virtual tool to each of the tool groups;

means for combining capacity of the virtual tool into the first capacity information of the tool group to generate second capacity information thereof accordingly;

means for determining a first manufacturing plan for the tool group according to the master production schedule, the WIP profile and the second capacity information thereof; and

means for determining a second manufacturing plan according to the workload allocation of the virtual tool in the first manufacturing plan.

10. (currently amended) The system of claim 9, wherein the virtual tool is assessed as having[[has]] an unlimited capacity and is defined as a [[the]] least preferred tool in the tool group.

11. (currently amended) The system of claim 9, further comprising means for ~~determines~~ selects the a backup request tool group of one of the fabrication facilities as a backup requester according to the workload allocation of the virtual tool specified in the first manufacturing plan.

12. (currently amended)The system of claim 11[[9]], further comprising means for ~~determines~~ defines a backup demand, equal to the workload allocation of the virtual tool, of the ~~backup request tool group~~ backup requester according to the first manufacturing plan.

13. (currently amended)The system of claim 12[[9]], further comprising means for ~~determines~~ defines[[a]]~~the backup supply tool group of one of the fabrication facilities as a backup supplier to fulfill the backup demand and a backup supply provided therefrom~~ according to the first manufacturing plan, the backup demand, and the master production schedule.

14. (currently amended) The system of claim 13[[9]], further comprising means for allocating each of the tools of the ~~backup supply tool group~~ backup supplier an equal share of workload allocation specified in the backup demand.

15. (currently amended) The system of claim 13[[9]], further comprising means for introducing a simulated backup tool, having capacity equaling backup capacity received from the backup supplier ~~supply tool group~~, to the backup requester ~~tool group~~.

16. (currently amended) A backup planning method, scheduling backup operations in a manufacturing system, wherein the manufacturing system comprises a plurality of manufacturing facilities, each of which comprises a plurality of tool groups, and each tool group comprises a plurality of tools, the method comprising:

providing first capacity information, a master production schedule, and a WIP (work-in-process) profile of the tool group;

assigning a virtual tool to each of the tool groups;

combining capacity of the virtual tool into the first capacity information of the tool group to generate second capacity information thereof accordingly;

determining a first manufacturing plan for the tool group according to the master production schedule, the WIP profile and the second capacity information thereof; and

determining a second manufacturing plan according to the workload allocation of the virtual tool in the first manufacturing plan.

17. (currently amended) The method of claim 16, wherein the virtual tool is assessed as having[[bas]] an unlimited capacity and is defined as a [[the]] least preferred tool in the tool group.

18. (currently amended) The method of claim 16, further ~~determining selecting the a~~
~~backup-request~~ tool group of one of the fabrication facilities as a backup requester according to
the workload allocation of the virtual tool specified in the first manufacturing plan.

19. (currently amended) The method of claim 18[[16]], further ~~determining~~ defining a
backup demand, equaling to the workload allocation of the virtual tool, of the ~~backup-request~~
~~tool-group~~ backup requester according to the first manufacturing plan.

20. (currently amended) The method of claim 19[[16]], further ~~determines~~
defines[[a]] ~~the backup-supply tool group of one of the fabrication facilities as a backup supplier~~
to fulfill the backup demand ~~and a backup supply provided therefrom~~ according to the first
manufacturing plan, the backup demand, and the master production schedule.

21. (currently amended) The method of claim 20[[16]], further allocating each of the
tools of the backup supply tool group an equal share of workload gained in the backup operation.

22. (currently amended) The method of claim 16, further introducing a simulated
backup tool, having capacity equaling backup capacity received from the backup ~~supplier~~ tool
~~group~~, to the backup requester ~~tool-group~~.

23. The method of claim 16, wherein the tool is a semiconductor manufacturing tool.

24. (currently amended) A computer readable storage medium for storing a computer program providing a backup planning method implemented in a manufacturing system, wherein the manufacturing system comprises a plurality of manufacturing facilities, each of which comprises a plurality of tool groups, and each tool group comprises a plurality of tools, the method comprising:

receiving first capacity information, a master production schedule, and a WIP (work-in-process) profile of the tool group;

assigning a virtual tool to each of the tool groups;

combining capacity of the virtual tool into the first capacity information of the tool group to generate a second capacity information thereof accordingly; and

determining a first manufacturing plan specifying renewed workload allocation for the tools and virtual tool for the tool group according to the master production schedule, the WIP profile, and the second capacity information thereof.

25. (currently amended) The storage medium of claim 24, wherein the virtual tool is assessed as having[[has]] an unlimited capacity and is the least preferred tool in the tool group.

26. (currently amended) The storage medium of claim 24, further determining a backup request tool group according to the workload allocation of the virtual tool specified in the first manufacturing plan.

27. The storage medium of claim 24, further determining a backup demand, equaling to the workload allocation of the virtual tool, of the backup request tool group according to the first manufacturing plan.

28. (currently amended)The storage medium of claim 24, further ~~determining~~ defining ~~[[a]]the backup supply-tool group of one of the fabrication facilities as a backup supplier to fulfill the backup demand and a backup supply provided therefrom~~ according to the first manufacturing plan, the backup demand, and the master production schedule.

29. (currently amended)The storage medium of claim 24, further allocating each tool of the backup supplier y-tool-group an equal share of workload gained in the backup operation.

30. (currently amended)The storage medium of claim 24, further introducing a simulated backup tool, having capacity equaling backup capacity received from the backup supplier y-tool-group, to the backup requester tool-group.